

Atmospheric Electricity Interfering with Telegraphic Communication.—Ft. Keogh, 31st, lighting very vivid and almost continuous, but no audible thunder, had to cut out instruments. Deadwood, 24th, 25th, 26th; Ft. Griffin, 24th, 25th; Jacksboro, 3d, 4th, 11th, 26th to 28th; Eagle Pass, 4th, 5th, 7th, Castroville, 5th to 7th, 17th, 18th, 28th, 29th; San Antonio, 28th, 29th; Ft. McKavett, 3d, 17th, 18th; Brackettville, 3d, 4th, 5th, 7th, 18th; Ft. Elliott, 12th; Mt. Washington, 10th.

Ground Currents.—Dayton, Wash. Ty., 30th; Deadwood, 23d.

Auroras.—No auroral manifestation of particular importance was observed during the month, save, perhaps, that of the 15th, which extended from northern Michigan to southwestern Dakota, and northward to Manitoba, five intervening stations reporting. The display began about 9 p. m. and ended between 10.30 and 11 p. m. The following were local displays: Woodstock, Vt., 9th, 3 a. m., seen through broken clouds. New Haven, 24th, 7.30 to 9 p. m., was seen in the northeast, altitude 30°. Rochester, 12th, 11.40 p. m. to 2 a. m. of the 2d, at times flashes of light would illumine the heavens, alternating with heavy darkness, produced by the interference of clouds; no segment visible. Alpena, 4th, from 8.10 to 8.50 p. m., diffuse light, without streamers; 16th, 8.15 to 10.30 p. m., faint beams, altitude from 15° to 40°, width about 1°, apparently moving from west to east; 18th, 8 to 9.15 p. m., diffuse light, without streamers. Cresco, Ia., 16th, 9.25 to 10 p. m., faint beams between north and northeast. Mission House, Wis., 15th, 24th and 28th, very dim, altitude about 30°, no cloud below arch.

Zodiacal Light.—Wabash, Ind., 16th; Cresco, Ia., 15th and 16th; Clinton, Ia., 14th, 15th, 16th and 17th; Monticello, Ia., 15th, 17th, 19th and 22d; Clear Creek, Neb., 16th and 24th; Atco, N. J., 15th, 26th, 28th and 29th; Nashville, 15th, 17th, 19th, 20th, 26th, 27th and 28th.

OPTICAL PHENOMENA.

Solar halos have been observed in the various districts on the following dates: New England, 1st to 5th, 12th to 14th and 29th. Middle Atlantic States, 1st to 5th, 11th and 12th. South Atlantic States, 11th, 25th and 30th. Florida, 20th and 31st. Eastern Gulf States, 4th, 7th and 19th. Texas, 15th. Ohio valley and Tennessee, 1st, 3d to 6th, 10th, 12th, 13th, 20th, 21st and 24th. Upper Lake region, 1st to 4th, 6th, 9th, 11th and 12th. Lower Lake region, 1st, 2d and 5th. Upper Mississippi valley, 3d, 5th, 10th, 20th, 21st, 24th and 26th. Middle Slope, 3d to 6th, 9th, 13th, 24th and 27th. Middle Plateau district, 4th to 8th, 14th, 24th and 29th to 31st. Northern Plateau district, 1st to 3d, 7th, 10th to 12th, 20th, 23d, 29th and 31st. Northern Pacific Coast region, 2d, 6th, 10th, 11th, 17th, 18th, 20th and 29th, 30th. California, 2d, 4th, 7th, 11th, 15th, 19th, 20th, 23d, 26th, 29th and 30th.

Lunar halos have been observed in the various districts on the following dates: New England, 5th, 8th and 11th. Middle Atlantic States, 3d, 4th, 7th, 8th, 10th to 13th, 29th and 31st. South Atlantic States, 12th and 13th. Eastern Gulf States, 3rd, 4th, 6th, 7th and 10th. Western Gulf States and Texas, 3d to 9th, 11th to 13th and 31st. Ohio valley and Tennessee, 3d to 6th, 8th, 12th and 13th. Lower Lake region, 1st, 4th, 6th, 8th, 10th and 31st. Upper Lake region, 1st to 4th, 12th. Upper Mississippi valley, 5th, 6th, 7th, 10th, 13th and 14th. Lower Missouri valley, 6th and 16th. Southern Plateau, 3d, 4th, 5th, 7th, 8th and 9th. Northern Pacific Coast region, 3d, 6th and 22d. California, 4th, 7th, 11th and 15th.

Polar Bands.—New Corydon, Ind., 3d; Gardiner, Me., 1st; Fayette, Miss., 12th; Almota, Wash. Ty., 17th; Memphis, 12th.

Mirage.—Indianola, 14th, 15th, 17th, 19th and 31st. Milwaukee, 18th, very beautiful, was witnessed over Lake Michigan; ships could be seen, apparently sailing in the sky with masts pointed downward. The distance of the vessels must have been great, but the reflection showed them as plainly as if they had been in close proximity. New Haven, 12th, very beautiful, magnifying the vessels at anchor: the hull of an incoming brig appeared in the distance 40 feet high.

MISCELLANEOUS PHENOMENA.

Meteors.—Almota, Wash. Ty., 18th. Boise City, 3rd. Ft. Stevenson, 2d, very brilliant observed about 8 p. m. in the southern heavens; first appeared about 5° above the horizon and inclined south and downward; its flight lasted about 5 seconds, leaving a faint train; in size, it was apparently, nearly equal to that of the full moon. Fredericksburg, Tex., 22d, 10:10 p. m., altitude 45°, direction from northwest to southeast; as it passed along it gave a light much brighter than the stars, leaving a trail of dark blue color and exploded apparently into three balls of fire. Davenport, 22d. Washington, D. C., 9th, 9:45 p. m., appeared 45° above southeastern horizon, pursued a northwesterly course through zenith; extent of its visible path was about 20°. Wood's Holl, 3d, 2:10 a. m., from east to west. Woodstock, Md., 17th, 9 p. m.; 23d, 9 p. m., from southeast to northwest; 24th, 8:35 p. m., from west to east. Williams-town and Fall River, Mass., 13th. Thornville, Mich., 27th. Fayette, Miss., 1st. Atco, N. J., 22d, 24th. North Volney, N. Y., 23d. Waterburg, N. Y., 2d. Little Mountain, Ohio, 7th. Mission House, Wis., 2d.

Earthquakes.—La Salle, Ill., 25th, during the night a slight shock was distinctly felt in the manufacturing area, between the bluffs and the canal, in the southwestern part of the city. Six fissures, measur-

ing from one-half to two inches in width, and traceable for a distance of about 600 feet were produced, running nearly parallel from northwest to southeast. The walls, foundations and furnaces in the bottle and window glass factories were cracked in numerous places, and estimated to have sunk six inches. Ft. Gaston, Cal., 10th, 9.09 p. m., vibration from northeast to southwest; windows rattled and furniture in hospital was shaken up as if a heavy piece of ordnance had been discharged in the immediate vicinity; duration, a few seconds: no sound heard. Campo, Cal., 13th, slight shock about 2 a. m.; appeared to pass from southeast to northwest.

Insects.—*Chinch Bug*: Vandalia, Ill., 22d, in great numbers; much damage to corn. Salem, Ill., 23d, wheat fields alive with them; crop a total loss; farmers afraid to plant corn. Carlinville, Ill., 23d, great damage to wheat crop; hundreds of acres being plowed up. *Hessian Fly*: Vandalia, Ill., 23d, in great numbers; much damage to wheat. *Army Worm*: Anna, Ill., 23d, much damage to wheat, grass and young corn. *Thirteen-year Locusts*: Little Rock, Ark., 23d, great numbers reported from various portions of the State. Swanwick, Ill., appeared on 17th. Pierce City, Mo., 15th, appeared in great numbers. *Cut Worm*: Little Rock, Ark., 23d, cotton completely destroyed on many large plantations. *Potato Bugs*: Creswell Kansas, 21st, observed in small numbers. Heath, Mass., numerous during latter part of month. Flushing, N. Y., appeared on 15th. Blooming Grove, Pa., appearing in great numbers. West Chester, Pa., more numerous than ever before seen.

Sunsets.—The characteristics of the sky at sunset, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from 181 stations show 5,580 observations to have been made, of which 27 were reported doubtful; of the remainder 5,553, or 84.5 per cent.; were followed by the expected weather.

The following data, furnished by E. V. Berthoud, C. E., Golden, Col., is indicative of the relative

DATE.	Width of water prism. ft.	Area. sq. ft.	Mean vel. of stream. ft. per sec.	Tot. discharge in c. ft. per sec.
Feb. 20, 1880.....	27.10	28.10	2.00	52
March 22, 1880.....	31.00	26.72	2.06	53
March 30, 1880.....	32.00	23.30	2.49	59
May 5, 1880.....	35.00	41.30	2.31	85
Sept. 15, 1880.....	34.00	38.22	2.23	83
Oct. 21, 1880.....	35.00	39.15	2.52	99
March 25, 1881.....	32.00	35.79	3.01	107
May 4, 1881.....	52.00	186.20	3.10	440
June 6, 1881.....	55.00	196.20	3.17	1,003

rain-fall in different seasons, and bears especially upon the important question of water supply for irrigation. The following cross sections and gauges of Clear Creek have been taken, always at the same spot, in continuation of a series that now extends over a space of twenty-one years. Clear Creek is one of the main affluents of South Platte River, and has a watershed of four hundred square miles. The observations relate to a point in latitude 39° 45' 24", longitude 115° 8' 3", altitude, 5,700 feet.

Sun Spots.—The following record of observations, made by Mr. D. P. Todd, Assistant, has been forwarded by Prof. S. Newcomb, U. S. Navy, Superintendent Nautical Almanac Office, Washington, D. C.

DATE— May, 1881.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		REMARKS.
	Groups	Spots.	Groups	Spots.	Groups	Spots.	Groups	Spots.	
1, 9 a. m.....	0	0	1	1	0	2	1	6	Many of the spots small.
6, 7 a. m.....	4	9	0	0	0	0	5	15	
7, 9 a. m.....	0	0	1	2	0	0	4	13	
8, 9 a. m.....	0	5	0	0	0	0	4	18	
5 p. m.....	0	7	0	0	0	0	4	25	
9, 8 a. m.....	0	0	0	0	0	0	4	18	
10, 9 a. m.....	1	3	0	3	1	3	5	18	
11, 9 a. m.....	0	7	1	4	0	7	3	17	
12, 9 a. m.....	1	10	1	2	1	10	2	20†	
13, 8 a. m.....	1	2	0	0	1	2	3	22†	
14, 8 a. m.....	0	0	0	0	0	0	3	13†	Many of the spots small.
15, 9 a. m.....	0	0	0	0	0	0	2	8	
16, 12 m.....	2	5	0	0	1	2	4	8	
22, 10 a. m.....	0	0	0	0	0	0	3	9	
23, 8 a. m.....	1	5	0	0	0	0	4	16	
24, 6 a. m.....	0	10	0	0	0	0	4	26†	
25, 8 a. m.....	0	10	2	6	0	0	2	30†	
26, 6 a. m.....	1	7	0	0	1	7	3	37†	
27, 8 a. m.....	1	7	0	0	0	6	4	44†	
28, 8 a. m.....	0	12	0	0	0	12	+	56†	Faculae were seen at the time of every observation
29, 9 a. m.....	0	0	0	8	0	0	4	48†	
30, 8 a. m.....	2	13†	0	7	1	1	6	60†	
31, 7 a. m.....	0	10	1	5	0	4	5	65†	

† Approximated.

Mr. William Dawson, at Spiceland, Indiana, reports as follows: 6th, 4 groups, 9 spots, 2 large ones near east side; 8th, 5 groups, 6 spots; 11th, 4 groups, 25 spots, 3 large ones in one group near east side, one large spot very close to west edge; 13th, 3 groups, 34 spots; 15th, 2 groups, 6 spots, large spot near centre, two spots near east edge; 17th, 4 groups, 13 spots; 19th, 3 groups, 18 spots; 22d, 4 groups, 30 spots; 25th, 5 groups, 38 spots; 27th, 4 groups, 80 spots, 40 spots in one group just north of centre, new group 20 spots at east side; 31st, 4 groups, 65 spots, one large group of 55 spots, 4 of them large and visible to naked eye, in southeast quadrant. Mr. H. D. Govey, at North Lewisburg, Ohio, reports: Observed on every day, except 1st, 3d, 5th, 16th, 17th and 18th, when it was cloudy; most numerous on 27th, 28th and 29th; one exceedingly large on 30th and 31st. Mr. J. M. Partrick, at North Volney, N. Y., reports as follows: observed on the 4th; 7th, 4 groups, 5 spots; 9th, 3 groups; 10th, 1 group; 13th, 1 group; 14th, 2 groups; 23d, 3 groups; 24th, 2 groups; 25th, 2 groups; 27th, 3 groups, 15 spots.